

A White Colored Callus Isoline in Lotus

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Previous research into Lotus corniculatus cell cultures resulted in the isolation and characterization of a rapidly growing, relatively homogeneous green callus culture of Leo which readily regenerated plants. Further studies using internode segments from meristem cultures of genotypes of the cultivar Leo resulted in the isolation of a callus line with normal light green pigmentation which then gave rise to a white colored callus isolate. The white colored and normal light green callus were selectively subcultured, and after eight months both callus lines have been maintained as distinct lines. The light colored callus grows very rapidly (as fast as our fastest Lotus callus cultures), while the original green callus line is somewhat slower growing. These isolines have been tested for whole plant regeneration on a differentiation medium. The green parent line gave rise to numerous plants after six weeks on differentiation medium. Plants were regenerated after ten weeks from localized green areas which arose in the white callus after about six to eight weeks on the differentiation medium.

This isolate system should prove valuable as recent research has suggested that both green and white callus systems are required to efficiently determine whether a whole plant character is correlated with an in vitro response. The line could also be useful as a genetic marker for protoplast fusion experiments. Both the rate of back mutation-white to green and the stability of plants differentiated from this callus are being investigated.